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Exploring Cryptocurrency Acceptance Patterns: An In-depth Review of Influencing Factors from Adoption to Adaption for Human Resource Management

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Abstract

Cryptocurrencies are rapidly emerging as a novel virtual financial system with significant implications across various industries. This study systematically reviews the factors influencing cryptocurrency adoption, identifying key motivators and barriers that affect individuals' decisions to embrace this technology. Our findings reveal that while there is increasing interest in cryptocurrencies, substantial gaps remain in understanding the underlying motivations for adoption and the disparities in acceptance across different regions. We categorize these gaps and propose future research directions aimed at bridging them. Ultimately, this review contributes to a deeper understanding of cryptocurrency adoption dynamics and highlights the need for more comprehensive studies in this evolving field.

Keywords: Acceptance Model; Adoption Model; Blockchain Adoption; Cryptocurrency; Cryptocurrency Acceptance

1. Introduction

Although electronic money was introduced in the 1980s, digital currencies were not regulated until 2017 due to widespread belief that this monetary system was unstable. Additionally, it was created in response to business pressure to use this cryptographic method. Moreover, its transaction process is regarded as more secure [1]. Cryptocurrency is a novel financial idea based on distributed technology [2] that has attracted the attention of academics, businesses, and other sectors [3]. Supporters of cryptocurrencies think that cryptocurrencies have the ability to promote the development of emerging economies [4]. Access to cryptocurrencies might potentially and significantly benefit individuals in developing economies by providing them with access to financial tools that are often only accessible to

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people in nations with more sophisticated banking systems [5]. These financial instruments provide fewer transaction costs, improved access to credit, and other advantages that inhabitants of nations with more established banking systems take for granted [6]. In the remittance business of developing economies, cryptocurrency might make the process of sending money home more efficient [7].

Cryptocurrencies are increasing in number. A decade after the inception of Bitcoin, the total worth of all cryptocurrencies has topped $0.25 trillion. In context, there are now USD 1.7 trillion and EUR 1.4 trillion in circulation [8]. Bitcoin is the sixth biggest currency in circulation as of November 2019. The average daily trading volume of cryptocurrencies has reached 1% of foreign exchange markets, the biggest market in terms of trading volume, worldwide [9, 10]. Nigeria (10.0%), Kenya (11.6%), South Africa (12.5%), and Vietnam (20.3%) are reflective of a broader swath of bitcoin adoption around the globe. A recent Pew Research study predicts that around 16% of persons in the United States (US) possess bitcoin [11]. Moreover, these values are fluctuating fast.

The influence of technological advancements on nations and businesses varies [12]. Adoptions of cryptocurrency blockchain technology are no different. But research in this area of innovation has tended to be theoretical and prescriptive, concentrating mostly on the technological characteristics of blockchain and cryptocurrencies, with less attention paid to the factors that cause disparities among countries [13, 14]. Numerous developmental factors are known to impact the adoption of blockchain technologies and cryptocurrencies in both established and emerging countries [15-17].

Consistent with the prospective applications for development, the general increase in use and ownership, and the level of public awareness, extensive study has been performed to comprehend the purpose to utilize bitcoin. Since bitcoin is, at its heart, a financial technology, academic scholars from throughout the globe have sought answers to this question, with a predominant emphasis on technological adoption [18].

As far as we can tell, there is a limited systematic review of the research on the topic of cryptocurrency adoption. From this void, this study presents a systematic literature evaluation, integrating approaches to synthesize the literature, identify emergent research routes, reveal research gaps, and give future research recommendations. The following research questions are thus answered:

RQ1: What study areas have been examined about the adoption of cryptocurrencies? RQ2: What models have been used for studies on the uptake of cryptocurrencies?

RQ3: Where are the current adoption gaps for cryptocurrencies?

RQ4: In what paths should future research on cryptocurrency adoption go?

The relationship between cryptocurrencies and adoption has received little attention, as have the primary motives or impediments to establishing this link. This review wants to assist fill this void by systematizing the existing corpus of information on this issue and outlining potential future research options.

Cryptocurrencies have emerged as a revolutionary financial technology, gaining significant attention across various sectors. Despite their potential, understanding the factors influencing cryptocurrency adoption remains crucial. This study aims to systematically review existing literature on cryptocurrency acceptance, identifying key motivators and barriers that affect individuals' decisions to adopt this technology.The following sections are organized as follows: Section 2 presents the literature search approach and methodology used in this review. Section 3 discusses the antecedents of cryptocurrency adoption, detailing both motivators and inhibitors. Section 4 examines various theories and models applied in cryptocurrency research. Section 5 provides findings and discussions based on empirical studies, while Section 6 outlines future research directions and concludes the paper.

2. Literature Search Approach

The process by which a society adopts and starts using freshly created cryptocurrency is referred to as "adoption" [19]. Adoption is the process of adopting responsibility for and ownership of utilizing a cryptocurrency [20]. The purposeful process of becoming a bitcoin user is what the word "adoption" most often refers to [21].

In 2009, the world saw the creation of Bitcoin, the pioneering decentralized cryptocurrency that utilized blockchain technology. The idea of digital currency, however, has been around since the 1980s [...]. The purpose of developing blockchain technology was to create a decentralized system that would prevent tampering with data and transactions by outside parties. Distributed ledger technology known as blockchain stores an expanding list of data entries that are validated by nodes in the network that participate in mining. All of the information is stored in a public ledger that

records each and every transaction. Blockchain technology allows for the operation of a decentralized system independent of any one entity. All nodes have access to the complete transaction history because of blockchain. This makes blockchain transactions different from centralized ones in that they are decentralized and do not rely on a trusted third party as much. Because blockchain notes are anonymous, nodes may safely validate a transaction without worrying about their privacy being compromised [23]. As soon as a block is approved, every node finishes mining and is paid for their efforts. Everyone can start mining Bitcoins since there is a huge community of people that want to check and analyze new transaction data [24]. This reward is given to the miner who is the first to successfully validate a new transaction.

Banking has been propelled into the future by Bitcoin technology, which decentralizes and releases money from hierarchical power systems. Digital transactions between businesses and customers can also take place over a peer-to-peer network [25].

With cryptocurrency, third parties or governing bodies are no longer necessary for online transactions. The principle of encryption algorithms, which generates distinct, limited hash values, essentially governs the entire procedure of bitcoin transactions. Customers may buy, sell, and exchange hushes just like any other traditional fiat money through an authentication network of computer nodes [25].

2.1. Review method

This article aims to establish the cryptocurrency acceptance status, what theory and factors have been utilized, and what hurdles to adoption need to be addressed in future research. To analyze the growth of cryptocurrencies, a comprehensive literature search is performed. The goals of this study are to evaluate the existing literature on cryptocurrency adoption, examine the present state of adoption, and attempt at categorizing and thoroughly analyze the factors influencing the adoption decision.

2.2. Review process and database search

This review gathered the data of papers relevant to adoption and cryptocurrencies from the Google Scholar database, which is the most comprehensive collection of citations in the world. ScienceDirect was another source that was used. Data collecting has made use of several forms of the phrases "adoption" and "cryptocurrency," including varied spellings, plurals, and abbreviations. Instead of searching the whole text, the research was done by subject, which included searching by keywords, summary, and title. This was performed to increase the significance of the findings.

2.3. Antecedents of cryptocurrency adoptions (motivators and inhibitors)

This study considered a wide range of factors in assessing people's propensity to adopt bitcoin. The acceptance of bitcoin among users is one area that may be impacted by the characteristics outlined. In this part, we detail not just the factors that were shown to be motivators but also those that were found to be inhibitors. In other words, this section thoroughly examines the numerous factors that influence the decision to adopt. Both negative and positive influences on the desire to embrace cryptocurrencies are included in Table 1.

Table 1. The factors that influence the adoption decision

Factors	Good effect	Bad effect	References
Privacy	A greater degree of privacy as well as individual autonomy.	Sharing of personally identifiable information is often a condition of using most exchange websites.	[26-29]
High level of financial management	Complete control of the funds and any information about them.	A user might accidentally lose coins for several reasons.	[27, 28]
Curiosity with technology	Younger generations are eager and passionate to learn about the latest and greatest technology available.	-	[27, 29-31]
Influencer participation	Celebrities have a huge impact on their devoted following.	-	[32]
Global attention	Cryptocurrency has gained a lot of media attention recently, leading to more demand.	It is not accepted as legal tender anywhere.	[33-35]
Subjective norms	If enough of their friends start using cryptocurrency, other people will start using it too.		[36-39]
Alternative payment system	Putting an end to issues like lack of accessibility, forgery, prohibitive exchange rates, and rampant inflation A global currency that is standardized.		[30, 34, 35, 40]
Recognized by Businesses	Numerous businesses now welcome various forms of cryptocurrency.		[30, 41-43]
The Supply limit	The restricted supply safeguards the currency units against the central authority's arbitrary inflation.		[28, 44, 45]
Alternative Banking System	Intelligent yield generation and crypto loans	-	[46-48]
Low transactional expense	Creating opportunities for companies to accept cryptocurrencies as a form of payment from consumers The Global Remittance Market	-	[28, 44, 49]
Investment possibility	Some individuals could be interested in this because of the high price volatility.	The high price fluctuations might discourage potential participants.	[50-52]
System protection	To compromise the system, an attacker would need to control more than half of the coins in circulation.	While taking down the network is a difficult task, stealing cryptocurrency from a customer's home computer may be accomplished with relative ease.	[28, 34, 53]
Fast transfer	Quickly, in a matter of minutes at most. Available 24/7	-	[28, 44]
Anonymity	Users' need for secrecy is met, which is a major advantage.	This factor has attracted illegal activity.	[54-56]
Control over the System	A greater degree of openness since all transactions are recorded in the public ledger and accessible to all participants in the network.	From a regulatory standpoint, the lack of a centralized authority may be cause for worry.	[27, 44, 50]

3. Profile of the studies

3.1. Theories and models

When studying bitcoin's application, researchers have turned to a broad range of theoretical tools. However, there is shared conceptual ground between most of these ideas; for example, Fishbein's theory of reasoned action [57] is a source for several of them. The theory of reasoned action (TRA), initially proposed by Fishbein [57], is a research method for evaluating behavioral intention using two metrics: attitude toward the conduct and subjective criteria. It was later shown by Fishbein and Ajzen [58]. This oversimplified model states that people have positive or negative attitudes regarding services, products, and actions. Subjective norms include things like peer pressure and the general approval or disapproval of a certain action, good, or service. For example, a person's decision to use a cryptocurrency could be influenced, either favorably or adversely, by the general agreement among her peers [59]. To understand why individuals utilize bitcoin the way they do, several scholars have looked to reasoned action or its variations. The concept of reasoned action is the ancestor of the majority of theories that have since been developed to explain behavioral acts and intentions [36].

Next, we have TPB, which expands upon the TRA [60]. As an extra predictor within the TRA framework, perceived behavioral control is specifically included in TPB. The TPB postulates that three factors—attitude, perceived behavioral control, and subjective norms—indicate respondents' subsequent behaviors. According to the TPB, a person's perceived behavioral control is the degree to which they think they can participate in an activity or utilize a service that is provided to them. To rephrase, it stands to reason that people will exercise more restraint when they perceive more favorable circumstances to do the desired behavior [61]. How much control an individual believes they have over their actions depends on their personal history with the service or product in issue as well as their subjective evaluation of their abilities [62].

The TPB and the TRA are built upon by Davis' [63] technology acceptance model. When trying to predict who would use bitcoin, researchers have turned to Traders' Attitudes Towards bitcoin (TAM) [64]. In order to explore the adopting community's prior assumptions about a product or technology, the TAM employs two metrics: perceived utility (PU) and perceived ease of use (PEOU). Those two TAM elements could have a major impact on how consumers feel about a new product or technology [63]. Furthermore, according to Davis et al. [65], the perceived usefulness and attitude of the user impact their behavioral intention, which in turn predicts whether or not the user would embrace the new technology. It departs from the basic ideas of the TRA in that it does not depend on subjective criteria but rather use the PEOU and PU to determine how a user feels about a service, product, or website. Decomposed Theory of Planned Behavior (DTPB0), Social Cognitive Theory (SCT), Innovation Diffusion Theory (IDT), Model of Personal Computer Utilization (MPCU), and Combined Model of the TPB and TAM (C-TAM-TPB) are among the other models that expand upon the fundamental framework created by the TRA.

A theory that has evolved in this way is UTAUT, or the unified theory of acceptance and usage. The UTAUT has seen extensive use, both in its original and modified forms, to assess a user's crypto activity [59, 66]. The TAM, the TPB, and the TRA form the basis of the UTAUT; however, according to Venkatesh et al. [36], the beliefs and confidence that are postulated in the TPB and TRA do not determine usage in the future. Enabling conditions, societal factors, effort expectations, and users' performance expectations are the four predictor variables that make up UTAUT. These variables are used to forecast whether users would embrace and use new technology. The behavioral objectives and enabling conditions of an individual are the best predictors of their technology utilization. Similar to UTAUT in principle, UTAUT2 is a version [67]. The second version of UTAUT adds three more predictor variables to the original four [68]. The fundamental difference between UTAUT2 and other models is that UTAUT2 was developed to predict consumer adoption of new technology, rather than employee acceptance of a new working system [69]. New to UTAUT2 are hedonic motivation, monetary worth, and routine. Price value refers to how users perceive the practical benefits of new technology, whereas hedonic motivation describes how users perceive the hedonic value [70].

In Fig. 1, we can see how various hypotheses on bitcoin adoption and use relate to one another. In order to make the previously described theoretical models more applicable to bitcoin applications, several empirical studies have used new predictor variables, clarified or renamed existing ones, or even used only some of the predictor and outcome variables. In other words, a lot of research has started with a basic approach and then broadened it to look at other possible variables that affected the participants' choices to utilize cryptocurrency.

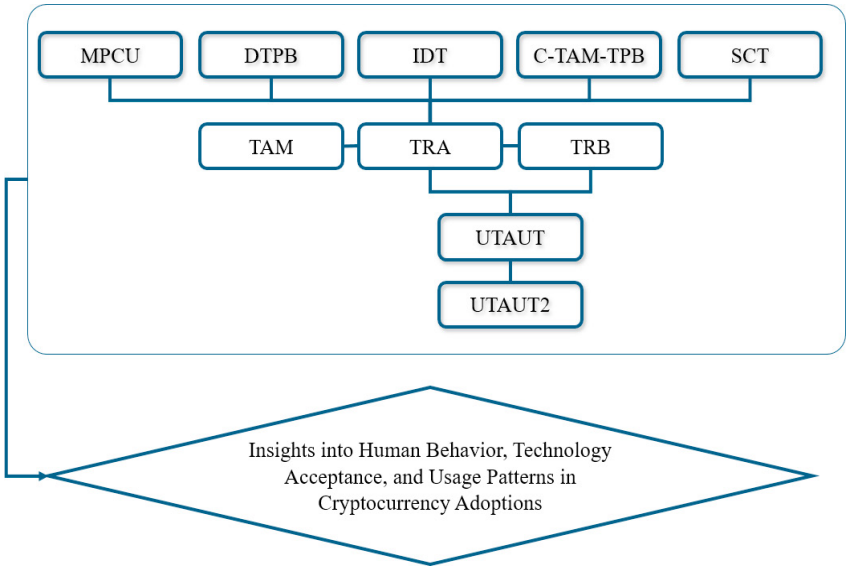

Fig. 1. Interconnected theories in understanding user behavior and acceptance of technology: Cryptocurrency

3.2. Methodology overview

There are some studies that have all been published in the last few years. Table 2 presents findings sorted by the methodology used in other studies (quantitative, qualitative, and mixed of them).

Table 2. Cryptocurrency adoption studies' methodology (2017-2022)

Methodology	Objective	Reference
Quantitative	Bitcoin's increasing adoption and popularity	[71]
Quantitative	Recognizing the high-stakes nature of cryptocurrency use for financial transactions	[72]
Quantitative	Factors that affect college students' decision to use virtual currencies using a moderated mediatiomodel	[73]
Quantitative	How social media influences consumers' willingness to adopt new technologies	[74]
Qualitative	Accepting bitcoin contributions by nonprofit organizations	[75]
Qualitative	Putting trust first: Bitcoin's potential and its limitations in the design process	[46]
Qualitative	Finding out whether bitcoin is suitable for newcomers by utilizing change tips and coinbase	[76]
Qualitative	Future and present applications of the blockchain technology framework in the travel sector	[77]
Mixed	Bitcoin's digital transformation into widespread adoption	[78]
Mixed	Taking a human-centered approach to solving blockchain's mass adoption problems, which includes enhancing the user experience.	[79]
Mixed	Investigating people's thoughts on the widespread use of bitcoin	[80]

4. Findings and Discussion

Scientists have put in a lot of energy and time over the years to address a wide range of topics related to cryptocurrencies. It's challenging to study the pace of cryptocurrency acceptance since so many variables affect it. Increased bitcoin use is a promising sign of future demand [81]. The acceptance of Bitcoin is unquestionably farther

along in the industrialized world than in developing nations, where politicians and authorities are still reluctant to embrace it [82].

There are a lot of reasons why cryptocurrencies should be used, but it also has certain potential limitations that might slow their widespread acceptance. Governments administer and manage currencies by international rules and the International Monetary Fund. However, some cryptocurrency enthusiasts worry that the purpose of cryptocurrencies is to release money from the jurisdiction of the government. The international monetary systems may rest easy knowing that these rules are in place to protect them. The future of bitcoin is in jeopardy due to the absence of clear rules or worldwide recognitions that characterize the trading of cryptocurrency. Because of its greater secrecy, bitcoin is sometimes used for criminal purposes like money laundering, which causes some to view it negatively and dismiss it altogether. The underlying technologies and the bitcoin industry are still in their infancy. It is also questionable whether or not companies would accept cryptocurrencies as payment methods, particularly those that are not Bitcoin.

Here is an overview of the ideas, questions, and outcomes for further research. To answer RQ1, several studies and factors that affect the adoption of cryptocurrencies have been looked at. A rising number of people are interested in cryptocurrencies and the underlying technology, blockchain, despite the recent decline. As a result of its widespread use, both industry and academia are showing a rising interest in furthering this technology. The wide range of publications discussing cryptocurrency and consumer adoption reflects the multidisciplinary nature of the issue, with information systems, engineering, and computer science journals taking the spotlight. Due to the rapid pace of generating new information, writers and journals alike have contributed to the body of work on this subject.

Many actual studies of cryptocurrency implementations go beyond the aforementioned theoretical models by, among other things, clarifying and changing others, adding predictor variables, and, in certain instances, employing a subset of the predictor and outcome variables. So, many studies have started with a basic strategy and then broadened it to look into other possible influences on the participants' choices to utilize cryptocurrency. The findings presented here helped to provide insight into RQ2.

As such, the goal of this systematic review was to identify where knowledge of cryptocurrencies and their adoption was lacking (RQ3). Subsequently, this part addresses some of the issues that have been raised by various groups in regard to the widespread adoption of cryptocurrencies:

Governments' reluctance to recognize cryptocurrency as a substitute for fiat money or legal tender is one concern with cryptocurrencies. The value of cryptocurrency assets might plummet if holders do nothing soon. Some groups, especially governments, are worried that the expenses of using cryptocurrencies will exceed their benefits, which is why these unsavory events keep happening. A further concern has been the potential for cryptocurrency to be used dishonestly, especially in the banking industry [83].

Although bitcoin claims to be inherently secure, there may be problems with accountability when using the technology [84]. Issues pertaining to exchange administration, privacy, and illicit transactions fall under this heading. At an exchange, you can buy and sell coins more often than anywhere else. The reason why attackers target exchanges is that the organization behind them has a lot of access to the money that clients deposit. Furthermore, it is not possible to change a recorded transaction in the ledger. This has the potential to be a significant benefit of using cryptocurrency. The fact that a seemingly legitimate transaction might really be fraudulent raises questions about the most effective way to integrate cryptocurrencies into society.

The broad acceptance of cryptocurrency is largely dependent on its transparency and trustworthiness [9]. The impact of transparency on privacy protections is an obvious next question. A lot of banks would prefer that their clients not know about their previous transactions since they are worried about being too transparent. The usage of bitcoin for illegal operations is more likely to have serious consequences for people and organizations due to privacy violation compared to traditional transaction methods. It is common practice, for instance, to review a suspect's financial records for any indication of prior misconduct in the event that they are being investigated for possible criminal activity. There are over 1,524 distinct varieties of cryptocurrencies available to customers [85]. False cryptocurrencies pose a credibility issue because to the difficulty consumers have in determining the coin's legitimacy or motivation.

The anonymous nature of Bitcoin and other cryptocurrencies is a key design feature of these digital currencies [86]. By using reference identities or addresses that are available to the public, all interactions on the Bitcoin network guarantee pseudonymity. In theory, an end user may have an unlimited number of reference IDs, but in reality, there

is no such limit. Consequently, no user's activity can be linked to a certain IP address. While user anonymity is essential to centralized e-cash protocols, it runs counter to the technology's goal of being unlinkable. Here, it is impossible to trace the origin of a monetary transfer. Everyone can see the whole history of transactions, including the identities of the sender and receiver, the value of the transaction, and any other pertinent details, as the majority of decentralized cryptocurrencies utilize a distributed ledger known as blockchain to record them.

Although scaling issues are preventing cryptocurrencies from being widely used in the financial sector and by consumers, they do have potential for adoption [87]. Because of these issues, the processing times for cryptocurrency transactions have increased, which is a major concern for investors accustomed to the lightning-fast processing speeds of previous systems. To scale blockchain-based money, it is not enough to simply increase the block size or decrease the time between blocks by making hash algorithms less challenging. The two methods mentioned above do not let the cryptocurrency to advance to a level where it can contend with market giants such as Visa, which handles 150 million transactions daily on average [38].

More research into the ethical and financial impacts of alternative coin liquidity level design is needed in light of the apparent adoption gap in cryptocurrencies. Additionally, blockchain technology has the potential to support societal ethical goals by associating mining with the production of social or environmental benefits [88]. The policy-making level, academic and scientific communities, and central banks all need to pay close attention to the potential consequences of blockchain technology [89]. This is because public service, central banks, and other government institutions should adopt and implement blockchain technology with caution and a focus on avoiding risks. Furthermore, it is important to explore the relationship between the disruptive innovation of cryptocurrencies and the trust and acceptance of online financial transactions that Mendoza-Tello et al. [90] emphasize.

5. Future Trends

This review can suggest future research recommendations in response to RQ4 by conducting a complete evaluation of the relevant literature and identifying the gaps. It is described several potential future research avenues in the field that might help solve these issues and pave the way for further development in the cryptocurrency industry. Table 3 provides a brief overview of several important areas that should be included in further studies.

Table 3. A quick look at a few important areas that should be studied in more depth.

Fields	Description
The Clarification of Ethics	There has to be an evaluation of cryptocurrencies from an ethical standpoint in the corporate world.
Blockchain-related interdisciplinary research	Interdisciplinary research of blockchain's effect, management, and implementation is required to include cross-sectoral applications and global concerns.
Sustainability	Long-term blockchain mining viability and cryptocurrency have received little attention in the academic literature.
Research on other cryptocurrencies	In further works, researchers should consider the customer reaction to many different cryptocurrencies.
Business and academic cocreation	Additional research should incorporate education, health, and food to encourage company management engagement.
Limited quantitative research	Investigations that are quantitative are naturally uncommon.
Theoretical sociological approaches	To better understand why people are embracing cryptocurrency, research might benefit from incorporating various theoretical sociological approaches.
Spreading out geographically fairly	The number of articles coming from both developing nations and rich shows that bitcoin knowledge is unevenly distributed throughout the globe.

6. Conclusion

Cryptocurrencies are swiftly gaining popularity as a new form of the virtual financial system with great potential in a wide variety of industries. This is largely due to the innovative distributed and decentralized method that underpins cryptocurrencies. Since the study of cryptocurrencies is experiencing rapid growth, it is essential to evaluate the status of the subject so far and identify prospective new areas of research to keep up with the latest developments. There seems to be a lack of systematic reviews of studies dealing with the widespread use of cryptocurrencies. This work fills that need by (RQ1) presenting a comprehensive literature review that (RQ2) integrates models and methods to synthesize the literature, (RQ3) exposing knowledge gaps, and (RQ4) providing directions for further study.

To provide an answer to RQ1, various studies and variables affecting the spread of cryptocurrencies have been reviewed. Despite recent declines, more individuals are interested in cryptocurrencies and blockchain. Both businesses and academics are interested in developing this technology because of its extensive application. Concerning RQ2, many studies have started with a basic strategy and then broadened it to study additional variables that may have impacted participants' usage of cryptocurrency. Subsequently, the next part (RQ3) addresses some of the issues that have been raised by various groups regarding the widespread adoption of cryptocurrencies like ethical concerns, accountability, credibility and transparency, trust and privacy, and scalability. By completing a comprehensive examination of the relevant literature and identifying the gaps, this study can provide future research suggestions in response to RQ4. Several prospective lines of inquiry in the subject are outlined, each of which can address these concerns and pave the way for the cryptocurrency business to advance. Table 1 presents a high-level summary of several key topics that should form the basis of future research.

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